The DiviCom® family of broadcast quality video encoders from Harmonic features a compact one rack unit design, full MPEG-2 compliance, unmatched picture quality, NMX Digital Service Manager™ support and the endorsement of major broadband service providers worldwide. The product line offers the efficiency, features, and performance to address the needs of every service provider.

The MV 500 offers powerful MPEG-2 compression, advanced features and proven reliability. Filters and intelligent controls consistently deliver the highest quality high definition (HD) video in applications where bandwidth efficiency is critical, including ATSC, cable or satellite television.

The DiviCom MV 500 is Harmonic’s third-generation MPEG-2 HD encoder, and the first to add a variety of advanced compression features including support for IP-based statistical multiplexing. The MV 500 features ENRGY™ integrated noise reduction that enhances proven techniques such as MCTF. Additionally, the MV 500 encoder extends the use of LookAhead technology to predict video complexity, apply filter control and improve video quality during challenging transitions. LookAhead is a key capability in DiviTrackXE™ and DiviTrackIP™, Harmonic’s market leading statistical multiplexing solutions.

These high-end features provide broadcast-quality HD video at bit-rates never before available in MPEG-2. Operators can enjoy benefits including:

- 10-20% bit-rate improvement in comparison with the industry-leading MV 450 while maintaining broadcast picture quality
- Significant video quality improvements on noisy sources, transitions, cross-fades and dissolves
- Ability to expand the existing HD channel lineup within the current bandwidth without replacing legacy set-top boxes

Standard Configuration

- HD-SDI input
- Redundant ASI or IP outputs
- CBR and VBR encoding
- Multi-format support (1080i and 720p)
- Multi-pass LookAhead encoding
- Motion compensated temporal filtering (MCTF)
- 4:2:0 and 4:2:2 encoding
- EIA 708 VANC Closed Caption extraction
- Supports ASI- or IP-based statistical multiplexing (HD and SD in the same stat mux pool)
- Single rack unit chassis
- Seamless MotionTrack image processing
- Multi-format audio encoding (MPEG-LII stereo; Dolby Digital (AC-3), stereo or 5.1; AAC/aacPlus stereo; Dolby E pass-through mode)
- ATSC and DVB compliance
- Inverse telecine mode
- Analog and digital audio inputs
- Plug and play standalone operation
- NMX Digital Service Manager support
For instance, cable operators can add 1-2 compressed channels per 256-QAM transport. ATSC broadcast stations can statistically multiplex one HD channel with up to four SD local channels to increase ad revenues.

Simply put, the MV 500 delivers the highest quality MPEG-2 compression for HDTV applications. It supports 1080i and 720p formats, as well as variable bit-rate (VBR) encoding using DiviTrackXE for ASI-based headends or DiviTrackIP for distributed IP-based systems.

The MV 500 can easily be incorporated into Harmonic’s DiviTrackIP closed-loop statistical multiplexing solution. Significant operational advantages and cost benefits are realized with DiviTrackIP, by connecting encoders and multiplexers via a switched IP network rather than port-to-port ASI interconnects. As a result, any encoder anywhere in the network can efficiently be part of any multiplex, essentially creating a “virtual headend.”

The MV 500’s architecture is based on multiple compression chips and Harmonic’s MotionTrack™ technology to apply fill-field motion estimation to the entire video image, producing pristine HD pictures. Support of inverse telecine mode conserves precious bandwidth for film-based content, while flexible GOP structures preserve video quality where scene cuts occur.

In addition, the MV 500 encoder supports up to five stereo pairs of audio encoding, including MPEG Audio Layer II, Dolby Digital and aacPlus. Integration with Harmonic’s NMX Digital Service Manager adds control for a full range of features including configuration, monitoring and redundancy. Maintenance functions, such as software upgrades, are easy to perform. Alternately, the MV 500 encoder can also be configured for standalone operation, alleviating the need for external network management. In standalone mode, the MV 500 is shipped pre-configured with settings for a specific application, arriving ready to use right out of the box.

Based on the industry’s most widely implemented standards, Harmonic broadcast systems are easy to expand and upgrade. With over 25,000 encoders shipped worldwide and more than 500 MPEG-2 HD encoders deployed and supporting a revenue-generating service, Harmonic has a proven reputation for outstanding performance and superior service.
# DiviCom MV 500

## System Management
- Local control panel 24-button keypad with hot keys
- 2X20 vacuum fluorescent display
- NMX Digital Service Manager
- Software upgrade via Ethernet or PCMCIA flash card

## Video Specifications
<table>
<thead>
<tr>
<th>Input Formats</th>
<th>Serial digital: SMPTE 292M (1080i, 720p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspect Ratio</td>
<td>4:3 and 16:9</td>
</tr>
<tr>
<td>Inverse Telecine Mode</td>
<td>Auto-detect (24+23.976 fps)</td>
</tr>
<tr>
<td>Closed Captioning</td>
<td>VANC per EIA-708 or via external server per SMPTE 333M</td>
</tr>
<tr>
<td>MPEG Profile and Level</td>
<td>4:2:0 MP@HL</td>
</tr>
<tr>
<td></td>
<td>4:2:2 HP@HL</td>
</tr>
<tr>
<td>Video Formats</td>
<td>1080i, 720p</td>
</tr>
<tr>
<td>Resolutions</td>
<td>1080i x 1920, 1440, 1280 pixels</td>
</tr>
<tr>
<td></td>
<td>720p x 1280 pixels</td>
</tr>
<tr>
<td>Frame Rates</td>
<td>29.97 fps (1080i)</td>
</tr>
<tr>
<td></td>
<td>59.94 fps (720p)</td>
</tr>
<tr>
<td>4:2:0 Encoding Rate</td>
<td>3 to 65 Mbps CBR or VBR</td>
</tr>
<tr>
<td>4:2:2 Encoding Rate</td>
<td>3 to 65 Mbps CBR only</td>
</tr>
<tr>
<td>Flexible GOP Structures</td>
<td>Fixed or adaptive GOP</td>
</tr>
<tr>
<td></td>
<td>or adaptive I-frame insertion</td>
</tr>
<tr>
<td>Digital Program Insertion (DPI)</td>
<td>SCTE35 insertion via SCTE104 triggers</td>
</tr>
<tr>
<td>Test Pattern</td>
<td>100% color bars</td>
</tr>
<tr>
<td>Motion Compensated Temporal Filtering (MCTF)</td>
<td></td>
</tr>
</tbody>
</table>

## Audio Specifications
- Number of Channels: 1, 3 or 5 stereo pairs
- Input Formats: Digital (AES3/EBU or S/PDIF) or analog (balanced/unbalanced)
- Audio Formats: MPEG Audio Layer II, Dolby Digital (AC-3), AAC and aacPlus (HE AAC), 2 Ch. encoding or 2/5.1 Ch. pass-through mode Dolby E in pass-through mode, 2 AAA cards for 5 pairs of Audio
- Analog Input Digitizing Resolution: 18 bits (24 bits with AAA)
- Analog Input Level Adjustment: 0 to +20 dBV in 0.5 dBV steps
- Operating Modes: Mono, dual channel, stereo, joint stereo
- Encoding Bit Rate: MPEG Audio Layer II - 56 to 384 kbps, Dolby Digital (AC-3) - 56 to 448 kbps, AAC - 32 to 384 kbps, aacPlus - 32 to 128 kbps, Dolby E - 1920 Kbps, 2304 Kbps
- Analog Sampling Frequencies: 32 kHz, 44.1 kHz, 48 kHz
- Digital Sampling Frequency: 48 kHz
- THD + Noise: < 0.05% at 1 kHz with 48kHz sampling
- Frequency Response: < 3 dB 20 Hz to 20 kHz

## Power
- Input Voltage Range: 85-132 VAC or 170-264 VAC (auto selected)
- Line Frequency: 47-63 Hz
- Typical Consumption: < 150 W

## Environmental
- Cooling: Dual fans; air flow front to right side
- Operating Temperature Range: 32° to 122° F or 0° to 50° C
- Storage Temperature Range: -4° to 176° F or -20° to 80° C
- Operating Humidity: < 95% non-condensing
- Safety: UL/cUL 1950, EN 60950, CE mark (73/23/EEC)

## Physical
- Dimensions (WxHxD): 19” x 1.75” x 24” or 48.26 cm x 4.45 cm x 61 cm
- Weight: 22 lbs./10 kg

## Ordering Options
- MV 500-CBR-C: 4:2:0, 3 stereo pairs, ASI output
- MV 500-CBR-C2-AAC: 4:2:0, 3 stereo pairs total (2 pairs of AAC/aacPlus, ASI output)
- MV 500-CBR-CC: 4:2:0, 5 stereo pairs, ASI output
- MV 500-CBR-CC2-AAC: 4:2:0, 5 stereo pairs total (4 pairs of AAC/aacPlus, ASI output)
- MV 500-CBR-CE: 4:2:0/4:2:2, 3 stereo pairs, Dolby E, ASI output
- MV 500-CBR-CCE: 4:2:0/4:2:2, 5 stereo pairs, Dolby E, ASI output
- MV 500-VBR-C: 4:2:0, 3 stereo pairs, VBR over ASI with DiviTrackXE™
- MV 500-VBR-C2-AAC: 4:2:0, 3 stereo pairs, 2 pairs of AAC/aacPlus, VBR over ASI with DiviTrackXE™
- MV 500-VBR-CE: 4:2:0/4:2:2, 3 stereo pairs, Dolby E, VBR over ASI with DiviTrackXE™
- MV 500-VBR-CE: 4:2:0/4:2:2, 3 stereo pairs, Dolby E, VBR over ASI with DiviTrackXE™
- MV 500-IC: 4:2:0, 3 stereo pairs, IP output, supports VBR over IP with DiviTrackIP™
- MV 500-IC2-AAC: 4:2:0, 3 stereo pairs, 2 pairs of AAC/aacPlus, IP output, supports VBR over IP with DiviTrackIP™
- MV 500-ICE: 4:2:0/4:2:2, 3 stereo pairs, Dolby E, IP output, supports VBR over IP with DiviTrackIP™
- MP1-LII, AC-3 and VANC standard on all models
- MV 500-I models can support either CBR or VBR over IP output, as determined by NMX license
<table>
<thead>
<tr>
<th>Region</th>
<th>Address</th>
<th>Phone/Contact</th>
</tr>
</thead>
</table>
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